

E-Commerce Behavior Analysis & Business Insights

1. Overview of the Dataset

The dataset represents user behavior data from a medium cosmetics online store, spanning from October 2019 to February 2020. The dataset contains a variety of event types that capture user interactions with products, providing valuable insights into user behavior and sales trends.

2. Data Structure

Property	Description
event_time	Timestamp of when the event occurred (in UTC)
event_type	Type of event (e.g., view, cart, remove_from_cart, purchase)
product_id	Unique identifier for a product
category_id	Product's category ID.
category_code	Product's category taxonomy, if available.
brand	Brand name of the product (may be missing).
price	Price of the product (float value).
user_id	Unique identifier for the user.
user_session	Temporary session ID for the user.

The events captured in the dataset are categorized into the following types:

- **View:** User viewed a product.
- **Cart:** User added a product to the cart.
- **Remove_from_cart:** User removed a product from the cart.
- **Purchase:** User completed the purchase of a product.

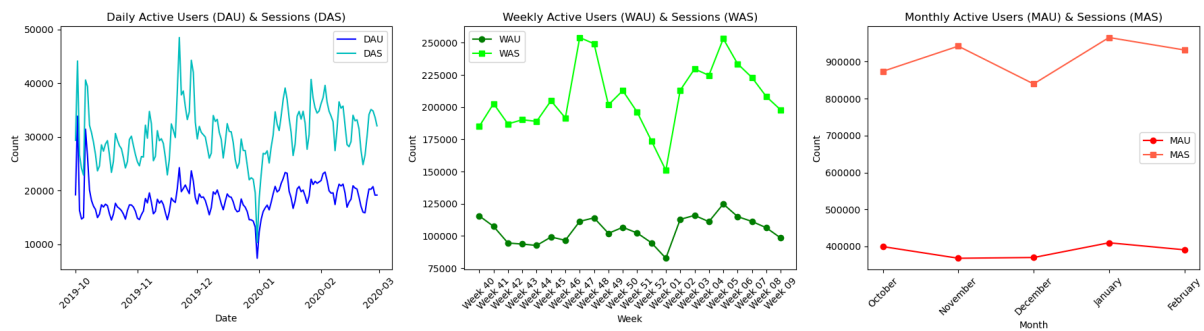
3. Key Metrics

3.1 DAU, MAU, WAU Analysis

To understand user engagement, we calculate the following:

- **DAU (Daily Active Users)**: The number of unique users active on a given day.
- **MAU (Monthly Active Users)**: The number of unique users active within a month.
- **WAU (Weekly Active Users)**: The number of unique users active within a week.

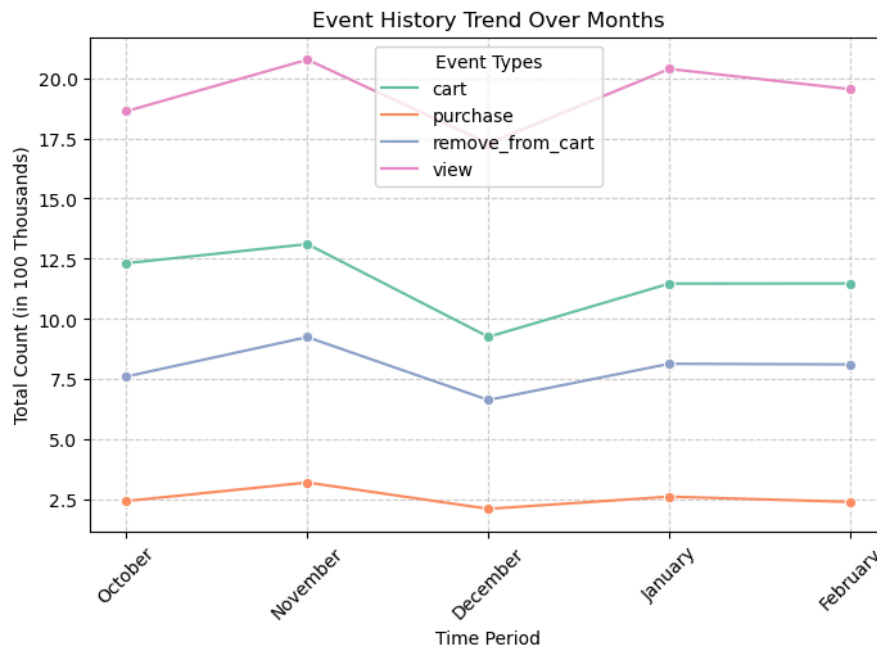
These metrics provide a clear picture of user interaction over time.



4. Business Problems & Insights

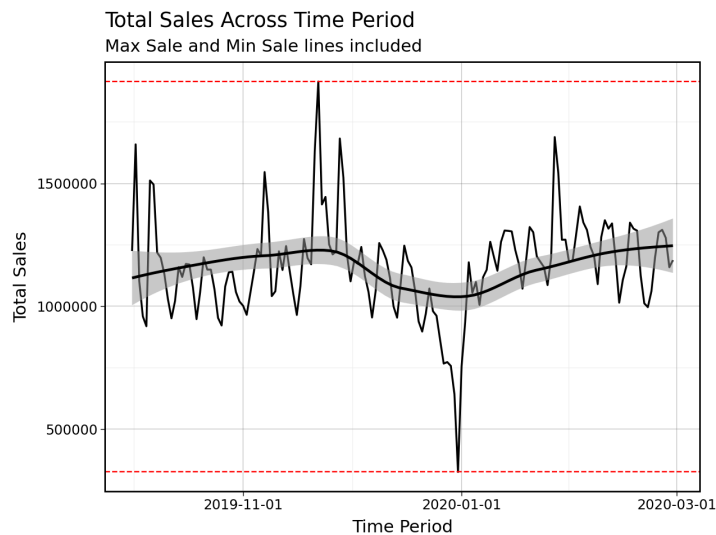
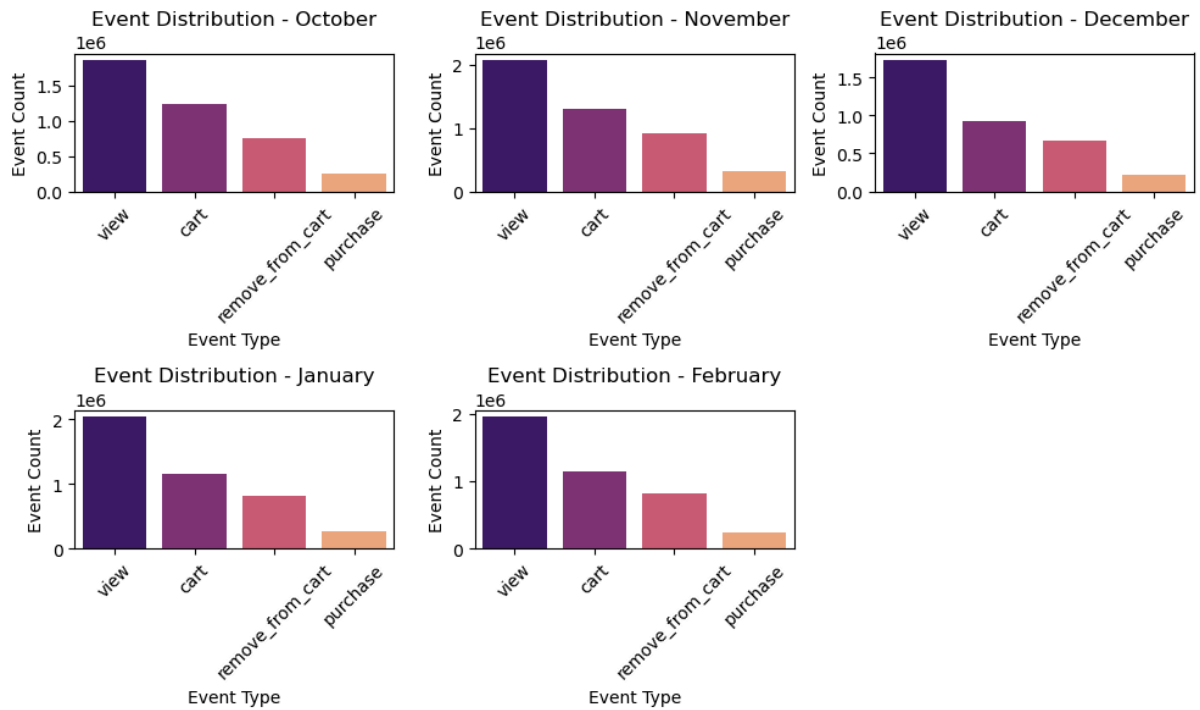
4.1. Investigating December Fall

In December 2019, there was a noticeable dip in sales leading up to the end of the year. However, the firm captured the holiday period around Black Friday (November 2019) and Valentine's Day (February 2020) well.



Key Insights:

- **Cart Abandonment:** There was a marked difference in the behavior of users who removed products from the cart compared to those who made purchases.
- **Sales Trends:** While there was a steady increase in sales during promotional events, the firm failed to capture sales around the Christmas and New Year period, possibly due to poor marketing during these holidays.



Recommendation:

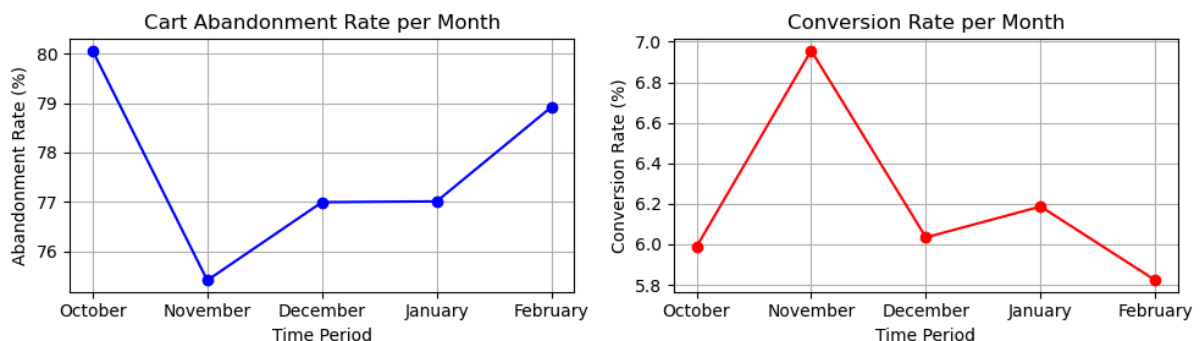
- Tailored Marketing Campaigns:** Focus on customized marketing efforts for holidays and events (e.g., Black Friday, Valentine's Day) via online channels (e.g., emails, mobile notifications) and offline (e.g., kiosks).

4.2. Impact of Conversion Rate and Cart Abandonment

The **cart abandonment rate** is crucial for understanding potential customers who reached the final stage of the purchasing process but abandoned their carts. The **conversion rate** indicates the percentage of users who made a purchase after visiting the site.

Key Insights:

- **Conversion and Abandonment Trends:** From October to November 2019, there was an increase in conversion rates and a decrease in cart abandonment rates. However, after November, the cart abandonment rate started to rise again.
- **Possible Causes:** High cart abandonment may be due to friction in the checkout process, high shipping fees, or weak remarketing promotions.



Recommendation:

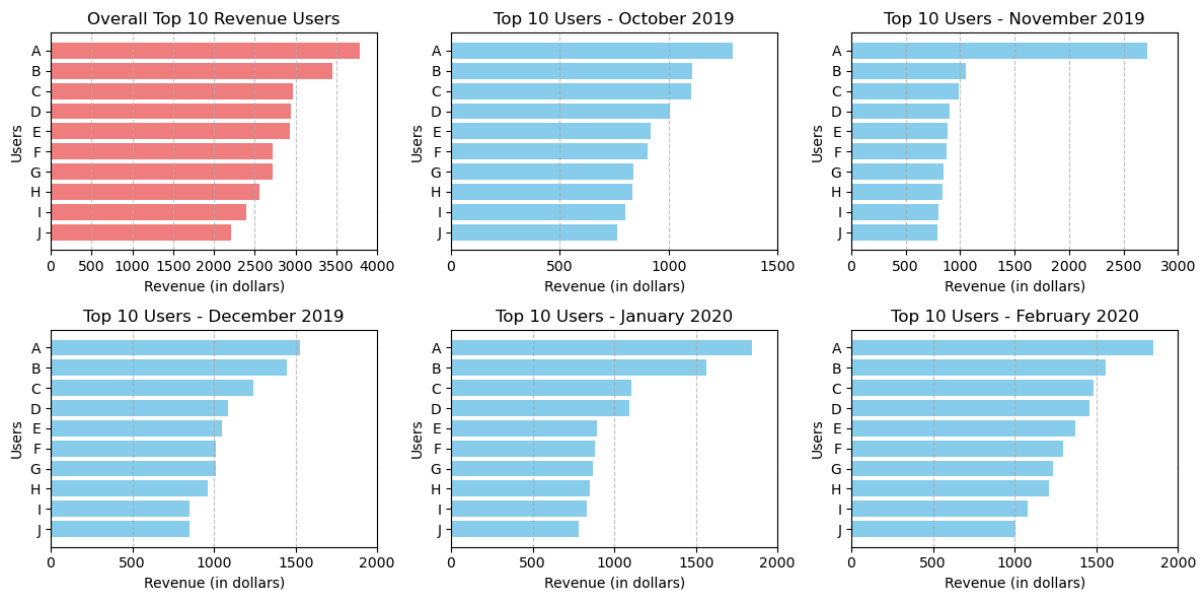
- **Re-targeting:** Implement email marketing strategies targeting customers who abandoned their carts.
- **Offer Incentives:** Provide promotional discounts, free shipping, or guest checkout options to reduce friction in the checkout process.

4.3. Impact of Retention Based on Loyal Customers

Loyal customers are those who consistently make repeat purchases, significantly contributing to revenue.

Key Insights:

- **High-value Repeat Customers:** The top 10 customers consistently generated significant revenue, with some spending over 3500 local currency units during the 5-month period.
- **Retention Power:** Customers who made repeat purchases tend to contribute high-value purchases, reinforcing strong customer retention.



Recommendation:

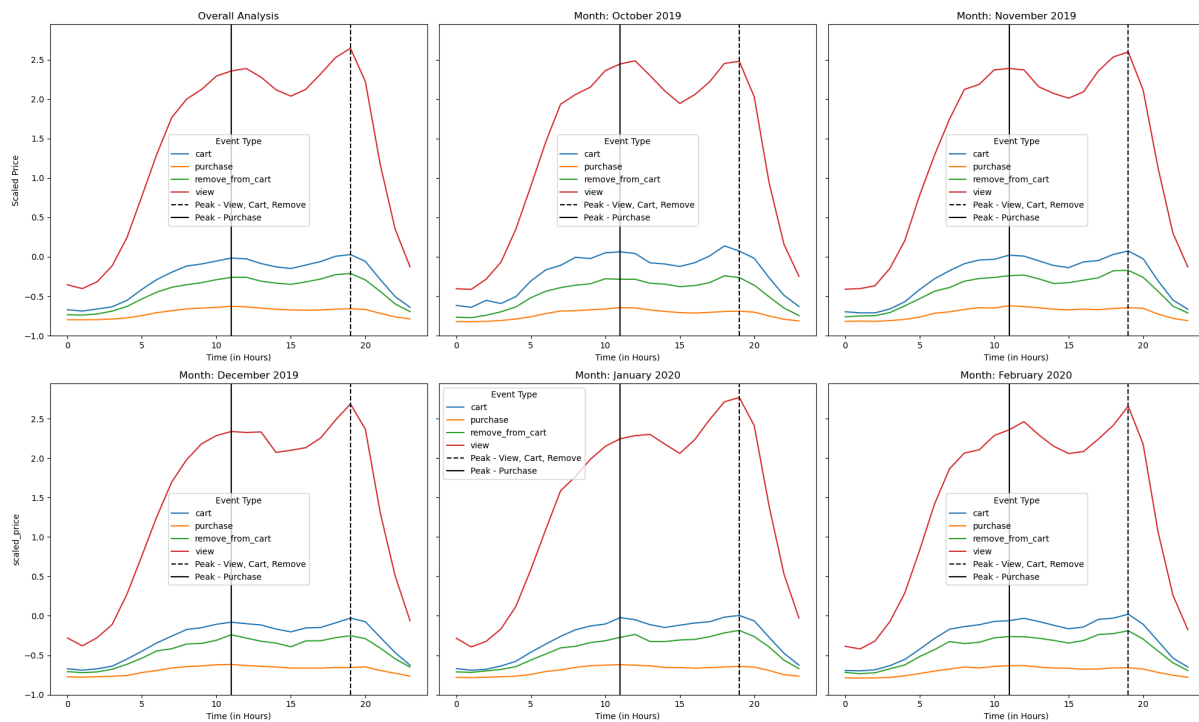
- **Loyalty Programs:** Develop strategies to retain high-value customers, such as loyalty rewards or exclusive offers.
- **Targeted Promotions:** Focus on retaining customers who have shown a tendency to make repeat purchases.

4.4. Impact of Price and Time on Sales

Price plays a critical role in user behavior, with customers often viewing high-priced products but purchasing lower-priced ones.

Key Insights:

- **Price Impact:** Customers are more likely to purchase lower-priced products, even though they may view higher-priced items.
- **Time Impact:** Purchases generally occur during morning hours (around 11 AM), while users are more likely to add/remove items from their carts during the evening (around 7 PM).



Recommendation:

- **Time-based Discounts:** Offer promotions during the time periods when users are most likely to complete a purchase (e.g., 11 AM).
- **Price-based Offers:** Highlight high-priced products with compelling discounts or deals during the initial browsing phase to increase conversions.

4.5 A/B Testing and Funnel Focus:

By analyzing the customer journey through the funnel (view, add to cart, remove, purchase), businesses can optimize for conversions.

Recommendation:

- Implement A/B testing to refine marketing techniques across different user groups (new users, middle users, loyal users).

5. Conclusion

Through this RCA analysis, we have identified several key insights that can help improve sales, conversion rates, and customer retention for the cosmetic e-commerce store. By focusing on tailored marketing campaigns, improving the checkout process, leveraging price and time-based promotions, and fostering customer loyalty, the company can boost its performance and enhance user engagement.

6. Future Work

Future work may involve:

- *Expanding the analysis to include customer segmentation based on more granular attributes.*
- *Exploring advanced machine learning models for predicting future sales trends based on historical behavior.*
- *Conducting in-depth analysis on specific product categories and user demographics.*